ASSIGNMENT 2

Textbook Assignment: "Surface Observation Elements" (continued), chapter 1, pages 1-34 through 1-65.
"Surface Observation Equipment", chapter 2, pages 2-1 through 2-9.

2-1. After ice crystals or rain droplets form, what process is responsible for their growth in size?

1. Accretion
2. Sublimation
3. Condensation
4. Evaporation

2-2. What is the standard abbreviation for lightning that discharges from cloud to ground?

1. LTGCA
2. LTGCC
3. LTGCG
4. LTGIC

2-3. Which, if any, of the following photometeors is routinely reported in surface weather observations?

1. Corona
2. Rainbow
3. Mirage
4. None of the above

A. SEA-LEVEL PRESSURE
B. BAROMETRIC PRESSURE
C. STATION PRESSURE
D. ALTIMETER SETTING

Figure 2-A

IN ANSWERING QUESTIONS 2-4 THROUGH 2-7, SELECT THE TERM IN FIGURE 2-A THAT MATCHES THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

2-4. Pressure read directly from a barometer.

1. A
2. B
3. C
4. D

2-5. Identified with the Q-signal QFE.

1. A
2. B
3. C
4. D

2-6. Indicates a pressure value calculated by applying a constant additive correction factor.

1. A
2. B
3. C
4. D

2-7. Used by aircraft to allow correct determinations of height above mean sea level.

1. A
2. B
3. C
4. D

2-8. Which of the following pressure values is routinely used by aircraft flying at altitudes above 18,000 feet?

1. Standard pressure
2. Altimeter setting
3. Sea-level pressure
4. Pressure tendency

2-9. Which of the following time periods is NOT routinely used for pressure tendencies?

1. 3 hr
2. 6 hr
3. 12 hr
4. 24 hr

A. DRY-BULB
B. WET-BULB
C. DEW-POINT
D. FROST-POINT

Figure 2-B

IN ANSWERING QUESTIONS 2-10 THROUGH 2-13, SELECT THE TYPE OF TEMPERATURE FROM FIGURE 2-B THAT MATCHES THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

2-10. Ambient air temperature air temperature as measured by a thermometer or an automatic sensor.

1. A
2. B
3. C
4. D

2-11. An approximation that represents the saturation point of air when the temperature is below freezing.

1. A
2. B
3. C
4. D

2-12. Must be calculated, and represents the temperature to which air must be cooled to reach saturation.

1. A
2. B
3. C
4. D

2-13 The lowest temperature that may be reached due to evaporative cooling.

1. A
2. B
3. C
4. D

2-14 Which of the following statements is true concerning the use of a ship's seawater injection temperature as a sea-surface temperature reading?

1. It is the least accurate sea surface temp reading
2. It is the most accurate sea-surface temperature reading
3. No corrections are needed to use injection temperature as sea-surface temperature
4. In the middle latitudes, sea-surface temperature and injection temperature are nearly identical

2-15. Wind direction is normally reported and forecast to what degree?

1. Nearest degree
2. Nearest 5 degrees
3. Nearest 10 degrees
4. Nearest 15 degrees

2-16. Of the following directions, which one should be reported when the winds are blowing at 10 knots directly toward the south?

1. 000°
2. 180°
3. 360°
4. 270°

2-17. On a ship, which of the following relative bearing directions represents dead astern?

1. 0°
2. 90°
3. 180°
4. 270°

2-18. To convert magnetic wind direction to true wind direction, the appropriate magnetic declination must be added or subtracted.

1. True
2. False

2-19. What is the standard unit of measure for wind speeds used by U.S. military forces?

1. Meters per second
2. Kilometers per hour
3. Statute miles per hour
4. Knots

2-20. One knot equals how many kilometers per hour?

1. 1.852
2. 1.1507
3. 0.5144
4. 0.5394

2-21. Which of the following phenomena is NOT considered wind character?

1. Mean wind speed
2. Variable wind direction
3. Wind speed gusts
4. Peak wind gust

A. VARIABLE WIND
B. GUST
C. SQUALL
D. PEAK WIND SPEED

Figure 2-C

IN ANSWERING QUESTIONS 2-22 THROUGH 2-25, SELECT THE TERM IN FIGURE 2-C THAT MATCHES THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

2-22. Rapid fluctuation in wind speed with a variation between peaks and lulls of 10 knots or more.

1. A
2. B
3. C
4. D

2-23. A sudden increase in wind speed by 16 knots or more, and remains 22 knots or greater for at least 1 minute.

1. A
2. B
3. C
4. D

2-24. The highest observed instantaneous wind speed.

1. A
2. B
3. C
4. D

2-25. Wind direction fluctuating by 60° or more.

1. A
2. B
3. C
4. D

2-26. What phenomenon is described as any change in wind direction by 45° or more during a 15-minute time period?

1. Gust
2. Squall
3. Wind shift
4. Variable wind

2-27. Which of the following wind directions is computed for Foxtrot Corpin?

1. Relative
2. True
3. Magnetic
4. Variable

2-28. Which of the following is NOT a factor affecting wave height?

1. Wave length
2. Fetch length
3. Wind speed
4. Wind duration

A. HEIGHT
B. DIRECTION
C. PERIOD
D. LENGTH

Figure 2-D

IN ANSWERING QUESTIONS 2-29 THROUGH 2-32, REFER TO FIGURE 2-D. SELECT THE WAVE PARAMETER THAT MATCHES THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

2-29. A measurement routinely underestimated from larger ships.

1. A
2. B
3. C
4. D

2-30. A measurement that is NOT made during a wave observation.

1. A
2. B
3. C
4. D

2-31. Measured time from wave crest to wave crest, or from trough to next trough.

1. A
2. B
3. C
4. D

2-32. Best measured by using the gyroscope repeater on a pelorus column.

1. A
2. B
3. C
4. D

2-33. When observing significant wave height, which of the following observations is most correct?

1. The average height of 100 waves
2. The average height of 50 waves
3. The average height of only the highest 50 waves
4. The average height of only the highest 1/3 of the waves

2-34. Which of the following statements is true about swell waves?

1. They take on a sine-wave pattern
2. They are waves that have moved out and away from the area in which they were formed
3. They have distinct wave periods
4. Each of the above

2-35. Which of the following parameters are evaluated for Romeo Corpin?

1. Seas and winds
2. Seas and visibility
3. Winds and visibility
4. Winds and precipitation

2-36. Which of the following statements is true regarding the danger of shipboard ice accretion?

1. It is a safety hazard to personnel
2. It may cause breakage of wires and antenna
3. It may cause the ship to roll excessively or capsize
4. Each of the above

2-37. What is the average freezing point of seawater?

1. +4.0°C
2. 0.0°C
3. -1.9°C
4. -4.0°C

2-38. What is the term used to describe a sea ice floe 5 km across?

1. Giant floe
2. Vast floe
3. Big floe
4. Medium floe

2-39. What is the term used to identify a piece of sea ice 1.5 m across?

1. Small floe
2. Ice cake
3. Small ice cake
4. Pancake ice

A. FRACTURE
B. LEAD
C. THAW HOLE
D. POLYNA

Figure 2-E

IN ANSWERING QUESTIONS 2-40 THROUGH 2-43, SELECT THE TERM IN FIGURE 2-E THAT MATCHES THE DESCRIPTION GIVEN. RESPONSES ARE USED ONLY ONCE.

2-40. Any sizable area of seawater enclosed by ice.

1. A
2. B
3. C
4. D

2-41. A break or crack in the ice sheet.

1. A
2. B
3. C
4. D

2-42. A long unfrozen or refrozen break or crack in an ice sheet that may be navigated by a ship.

1. A
2. B
3. C
4. D

2-43. A melt hole through the ice.

1. A
2. B
3. C
4. D

2-44. Of the following methods, which one correctly identifies how sea ice topographic features are formed?

1. The accumulation and erosion of snowfall
2. The pressure when ice sheets are compressed
3. The stress when ice sheets are separated
4. They are largely man-made

2-45. Which of the following statements is true about the drift of pack ice?

1. The seasons pay a role
2. It drifts to the right of true wind in the Northern Hemisphere
3. The actual drift is about 30° from wind direction
4. Each of the above

2-46. In the Northern Hemisphere, the speed of drifting pack ice ranges from 1.4 to 2.4 percent of wind speed.

1. True
2. False

2-47. Where do most icebergs originate in the northern hemisphere?

1. Greenland
2. Norway
3. Kamchatka
4. Canada

2-48. An iceberg about the size of a truck is called

1. an iceberg
2. a bergy bit
3. a growler
4. a medium floe

2-49. Icebergs move more by the influence of the subsurface water currents than by the influence of the winds.

1. True
2. False

2-50. Of the following statements, which one is true concerning relative humidity?

1. It is the ratio of water vapor in the air at different pressure levels
2. It is the ratio of water vapor the air holds to the amount it can possibly hold
3. It is a comparison between the actual air temperature and a standard temperature where most people feel comfortable
4. It is an indicator for impending precipitation

IN ANSWERING QUESTION 2-51, REFER TO FIGURE 1-38 IN THE TRAMAN.

2-51. What is the approximate apparent temperature if the air temperature is 90°F and the relative humidity is 80 percent?

1. 115°F
2. 105°F
3. 99°F
4. 89°F

2-52. As a General Heat Stress Index measurement, what does an apparent temperature of 101°F mean?

1. Fatigue is possible with prolonged physical activity
2. Heat exhaustion or heatstroke is possible with prolonged physical activity
3. Heat exhaustion or heatstroke is likely with prolonged physical activity
4. Heatstroke imminent with physical activity

2-53. Which of the following factors does the wet-bulb globe temperature (WBGT) index consider that is not considered by the general heat stress index (GHSI)?

1. Temperature
2. Humidity
3. Radiant energy
4. Vapor pressure

2-54. Computation of wind chill equivalent temperature includes an adjustment for the presence of sunshine.

1. True
2. False

IN ANSWERING QUESTION 2-55, REFER TO FIGURE 1-39 IN THE TRAMAN.

2-55. If the air temperature is 20°F and the wind speed is 15 knots, what is the approximate wind chill temperature?

1. 8°F
2. 2°F
3. -5°F
4. -50°F

IN ANSWERING QUESTION 2-56, REFER TO FIGURE 1-40 IN THE TRAMAN.

2-56. If the temperature is 15°C, what is the approximate safe time for a person in the water?

1. .9 hr
2. 1.7 hr
3. 2.0 hr
4. 3.0 hr

2-57. The water temperature is 40°F and the wind chill index on the surface is 25°F. Which of the following protective clothing should be worn by aircrew personnel in these conditions?

1. Thermal undergarments only
2. Anti-immersion suits only
3. Thermal undergarments and anti-immersion suits

2-58. The water temperature is 55°F in the target area. The decision whether or not the aircrew should wear anti-immersion suits is based upon what factor?

1. Number of mission personnel
2. Type of mission aircraft
3. Rescue response time
4. Time of day

2-59. If the pressure altitude at sea level is +1,500 feet, which of the following statements is correct?

1. The air is less dense than standard
2. The air is near standard density
3. The air is more dense than standard

2-60. If the pressure altitude indicates the air density is more dense than standard, which of the following statements is correct?

1. An aircraft may takeoff with a greater load than normal
2. An aircraft may only takeoff with a normal load
3. An aircraft may only takeoff with a lighter-than-normal load

IN ANSWERING QUESTION 2-61, REFER TO TABLE 1-5 IN THE TRAMAN.

2-61. When the altimeter setting is 30.02 inches and the station elevation is 500 feet, what is the pressure altitude?

1. -591 ft
2. -91 ft
3. 409 ft
4. 500 ft

2-62. Density altitude is affected the most by changes in what factors?

1. Pressure and humidity
2. Humidity and altitude
3. Pressure and temperature
4. Humidity and temperature

2-63. Given an actual temperature of 25°C and a pressure altitude of zero, what is the virtual temperature (V_t)?

1. +10°C
2. -10°C
3. +34°F
4. -34°F

2-64. The mass of water vapor present in a unit mass of air is known as what kind of humidity?

1. Relative
2. Specific
3. General
4. Total

2-65. In the ASOS, how are individual sensors linked to the data collection package?

1. Fiber optics
2. Hard-wired
3. Telephone modem
4. Microwave

2-66. How is the ASOS ACU connected to maintenance personnel, the weather office, or other users?

1. Fiber optics
2. Hard-wired
3. Telephone modem
4. Microwave

2-67. What is the maximum cloud height measured by ASOS?

1. 5,000 ft
2. 8,500 ft
3. 10,000 ft
4. 12,000 ft

2-68. Which of the following data is NOT measured by SMOOS?

1. Cloud coverage
2. Cloud height
3. Visibility
4. Pressure

2-69. With visibility greater than 3 miles, the SMOOS cloud height detector can measure a maximum of how many cloud-base levels below 12,000 feet?

1. One
2. Two
3. Three
4. Four

2-70. What type of visibility is measured by the SMOOS?

1. Prevailing
2. Runway visual range
3. Tower
4. Equivalent

2-71. Of the following display methods, which one is used by the AN/GMQ-29 system to display most of the meteorological data?

1. Indicator dials
2. LED readouts
3. LCD readouts
4. Digital recorders

2-72. With each tip of the ML-588/GMQ-14 tipping bucket rain gauge, a signal is sent to the GMQ-29 display controller. What other instrument receives the signal?

1. ML-642 pressure sensor
2. RD-108/UMQ-5 recorder
3. ML-643 dew point sensor
4. GMQ-29 digital voltmeter

2-73. Which of the following equipment is NOT normally stored within a ML-41 instrument shelter?

1. An electric psychrometer
2. A rotor psychrometer
3. A maximum and minimum thermometer
4. A rain gauge